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Duke Energy Carolinas, LLC's 2021 Avoided Cost  
Proceeding Pursuant to S.C. Code Ann. Section 58-  
41-20(A)

**JUNE 10, 2021**

**Introduction and Qualifications**

**Q. Please state your name, your position and your business address.**

**A.** My name is Matthew Stanley. I am employed by Pelzer Hydro Company, LLC (“Pelzer”) and Aquenergy Systems, LLC (“Aquenergy”), as Vice President and General Manager. I am also the designated environmental steward for both Pelzer and Aquenergy. The hydroelectric facilities owned and operated by Pelzer and Aquenergy are located in South Carolina. However, my business address is at the companies’ offices at 670 N. Commercial Street Suite 204, Manchester, NH 03101. I can be reached by email at [mstanley@centralriverspower.com](mailto:mstanley@centralriverspower.com) or telephone at (603) 554-2656.

**Q. Have you previously provided testimony to the South Carolina Public Service Commission?**

**A.** No, I have not. However, I have testified before local government bodies in proceedings regarding small hydro operations.

**Q. Briefly describe your professional background and your responsibilities, including at Pelzer and Aquenergy.**

**A.** I earned a B.S. degree in physics from Worcester Polytechnic Institute (WPI) in 2002. My entire professional career has been in power generation. Since at least 2011, my work has been focused on the management and operation of hydroelectric dams and plants. The hydro facilities I have been responsible for span various regions in the United States, including New England, New York, California, and North Carolina. I have been with Pelzer and Aquenergy since January 2020, when I joined their parent company Central

1 Rivers Power, LLC. Central Rivers Power owns and operates 45 hydroelectric power plants  
2 with a combined installed capacity of 340 MW across the United States.

3 **Q. On whose behalf are you providing testimony today?**

4 **A.** I provide this testimony on behalf of Pelzer and Aquenergy. As Vice President and General  
5 Manager for the companies, I am authorized and competent to give this testimony on behalf  
6 of both Pelzer and Aquenergy.

7 **Q. What is the purpose of your testimony in this Proceeding?**

8 **A.** The purpose of my testimony is to address the issues raised in Dockets 2021-89-E and  
9 2021-90-E under South Carolina Energy Freedom Act, codified at S.C. Code Ann. § 58-  
10 41-10 *et seq.* (the “Act”) as they relate to South Carolina owners and operators of small,  
11 non-utility, hydroelectric generation facilities like Pelzer and Aquenergy. Specifically, at  
12 this time I will provide general comments regarding the attributes of hydropower and  
13 whether avoided cost rates as currently proposed by Duke Energy Carolinas, LLC (“DEC”) and/or  
14 Duke Energy Progress, LLC (“DEP”) account for the differences of hydro facilities  
15 based on location and resource type. Overall, the current proposed avoided costs rates of  
16 DEC and DEP are not appropriate for small hydro qualifying facilities (“QFs”) like Pelzer  
17 and Aquenergy. Rather, the Commission should only approve rates and terms for hydro  
18 facilities that fully account for their unique attributes and capacity. That way, prudently  
19 operated small hydro facilities may hope to operate without enduring substantial and  
20 unavoidable losses.

21 **Q. Please describe the small hydro industry in South Carolina?**

1    **A.**     In South Carolina, there are only 30 total 1MW or greater conventional hydro plants. Of  
2           those, ten are owned by independent power producers (“IPPs”) like Pelzer and Aquenergy.  
3           The remaining plants are owned by large electric utilities.

4           The small hydro resource overall has remained a steady source of reliable power serving  
5           the grid in South Carolina for many decades. Many of these small hydro facilities were  
6           initially developed to provide mechanical energy to the textile industries and provided the  
7           foundation for growth and prosperity in South Carolina. Later, these hydroelectric facilities  
8           were converted to electrical energy to supply the grid and local communities with clean  
9           renewable power. Small hydropower is an invaluable capacity resource that serves a  
10          critical role in firming and supporting renewables in the clean energy transition.

11   **Q.**     **Please comment on the proper determination of the avoided cost rate.**

12          The rate making process under PURPA and the Act, as I understand it, has at least a couple  
13          of primary considerations. The first is the determination of the utility’s avoided costs,  
14          which may include related energy, capacity, and ancillary system benefits provided by the  
15          operation of small power producers. Also, avoided cost methodologies may account for  
16          differences in costs avoided based on the geographic location and resource type of a small  
17          power producer QF.

18   **Q.**     **Please describe the Pelzer and Aquenergy hydro facilities.**

19          Pelzer owns and operates two facilities—one in Pelzer, SC and the other in Williamston,  
20          SC. Aquenergy also has two facilities, which are located in Piedmont, SC and Ware  
21          Shoals, SC. All four hydro facilities are located along the Saluda River between Greenville

1 and Greenwood, South Carolina. All four facilities are QFs under PURPA and small power  
2 producers under the Act.

3 **Q. Are the Pelzer and Aquenergy hydro facilities currently able to operate at a break-**  
4 **even point or profitably?**

5 Absent unusual weather or maintenance cycles, no. Current avoided cost rates, which are  
6 materially similar to those being proposed in the current proceedings, make break-even  
7 operation an impossibility. The currently proposed rates by DEC, however, would be a  
8 continuation of the same harmful and inadequate rates demanded by DEC since at least  
9 February 2021.

10 **Q. Before February 2021, were small hydro plants like Pelzer and Aquenergy able to**  
11 **operate at least on a break-even basis? How?**

12 **A.** Yes. Previously, DEC applied an increased power adjustment factor of 2.0 in their avoided  
13 cost calculations for hydroelectric QFs. Though an imperfect solution to compensating  
14 hydro QFs, it did provide an avoided cost rate which historically allowed for small hydro  
15 facilities to at least break-even if conservatively managed. The end of a specific hydro PAF  
16 in February 2021, however, coupled with constantly lower avoided cost rates, has been  
17 financially devastating to small hydro QFs like those owned by Pelzer and Aquenergy.  
18 Reviewing the rates being proposed here by DEC in this proceeding, it appears DEC  
19 intends for this trend and treatment of small hydro QFs to continue. This is simply an  
20 unsustainable situation for small hydro.

21 **Q. Please comment on the calculation of the avoided cost when it comes to hydro**  
22 **facilities.**

1    **A.**     The calculation of the utilities avoided cost includes more than just the cost of the  
2           production related capacity and energy cost. For instance, the utility benefits from such  
3           items as reduced step-up, transmission, and substation losses by having small hydro  
4           generation facilities delivering power directly to the distribution system for nearby  
5           communities . It is important that the full range of avoided costs like these and other related  
6           system benefits be properly reflected in the calculation of the avoided cost.

7    **Q.**     **What are some of the other system benefits that should be considered?**

8    **A.**     In contrast with other generation resources which are intermittent, hydropower is seasonal  
9           and highly predictable. Small hydroelectric assets provide extremely reliable services of  
10          any resource type and do so in a non-emitting manner—in other words, without carbon.

11          More so than other renewable energy options, hydropower provides predictable real-time,  
12          day-ahead and oftentimes week-ahead energy and resource adequacy.

13          Small hydro also provides the DEC system resiliency as it does not have the risk of fuel  
14          supply disruptions common to fossil fuel generators as frequently seen in the Northeast and  
15          most recently in Texas. Capacity calculations do not readily capture the flexibility and fuel  
16          security of small hydro. The PAF attributed to all QFs does not completely capture the  
17          unique value of the small hydro assets. Rather, it improperly treats all assets as being the  
18          same, whether they are seasonal (like hydro) or intermittent and less predictable.

19          Hydro assets are also a resilient strategic asset in terms of cybersecurity risk. Hydro plants  
20          require limited electronics and can even be run without electronics when needed. They can  
21          also provide renewable black-start capabilities to improve grid resilience. This  
22          distinguishes hydro as a resource, especially from other renewables.

1   **Q.    Are there environmental benefits of hydro facilities that should be included in the**  
2       **calculation of avoided cost?**

3   **A.**    Yes. In addition to those already mentioned, hydro operation helps avoid fossil fuel  
4       generation which has not only carbon and other combustion byproducts, but in many cases  
5       other externalities related to the rail and pipeline transportation of the fuels, and the  
6       environmental damage and risks related to waste disposal. Hydro plants typically also  
7       provide recreational access points and other flood control benefits for the citizens of South  
8       Carolina. That is true of Pelzer's and Aquenergy's facilities. These benefits to the public  
9       are uncompensated, and there are real costs to the facilities to maintain these attributes.  
10      The environmental risks associated with the operations are subject to stringent federal  
11      oversight. In the rare cases where hydroelectric assets are retired, the disposition of the  
12      facility is further governed by strict oversight. The Commission should continue to  
13      recognize all these environmental benefits and avoided costs and risks associated with  
14      clean, renewable hydro power.

15   **Q.    How does the operation of hydro facilities impact and benefit communities?**

16   **A.**    There are significant local economic and environmental benefits associated with small  
17       hydro facilities. All independently owned small hydro facilities employ local workers in  
18       their communities. Small hydro plants have long histories employing local community  
19       members for over 100 years. In some cases, generations of families have learned the small  
20       hydro trade and continue to be employed at the hydro facilities. Most of the major  
21       maintenance and capital expenditure programs are also completed using local fabricators,  
22       suppliers, and electrical companies.

1 As discussed above, hydro plants typically also provide recreational access points and  
2 other flood control benefits. These benefits to the public are uncompensated despite their  
3 costs.

4 As initially indicated above, maintenance of these public benefits are subject to significant  
5 costs associated with oversight by multiple agencies, including the Federal Energy  
6 Regulatory Commission and several State agencies, who review and approve our  
7 compliance with stringent dam safety and environmental standards. The asset life and  
8 benefit to the state and local communities of hydroelectric facilities can be over 100 years.

9 **Q. Do you have any recommendations for the Commission?**

10 **A.** Ultimately, Pelzer and Aquenergy are asking that the full and unique value of hydro  
11 resources be properly considered in determining an appropriate avoided cost for hydro QFs.  
12 These include items such as benefits and avoided costs related to the environment, system  
13 reliability and reduced losses, and fuel related cost savings. A longstanding, reliable,  
14 renewable energy resource like hydropower should be able to operate without sustaining  
15 substantial losses. An interim option for achieving those objectives might be to reinstate  
16 DEC's use of a higher PAF multiplier for hydro, and then more fully revisiting the  
17 calculation of avoided cost in a subsequent proceeding. Even if somewhat imperfect, that  
18 option would at least preserve status quo and prevent hydro facilities from closing. That  
19 result—the loss of small hydropower—is also inconsistent with the Act's mandate to take  
20 into consideration the differences of generation resources when approving appropriate  
21 avoided cost methodologies.



1   **Q.    Are you saying that the hydro operators should be guaranteed the recovery of their**  
2       **annual capacity costs?**

3   **A.**    No, but prudently operated hydro projects should not be expected to operate at substantial  
4       loss and should have the opportunity to be fully compensated for the capacity and other  
5       benefits they provide. In many other states where Central Rivers Power operates small  
6       hydroelectric facilities, regulators acknowledge the benefits of small hydro and seek to  
7       support their operations through targeted renewable energy credits which are in the range  
8       of \$0.015-\$0.04/KWh. The alternative is that small hydro becomes permanently  
9       unsustainable and will be lost in state and local communities and for future generations.  
10      Importantly, the fact that small, independent hydro facilities are operating at a loss strongly  
11      suggests that the utilities themselves do not operate their own small hydro facilities within  
12      current avoided costs. Accordingly, a closer look at those specific utility operations would  
13      likely show that the proposed avoided cost rates result in hydro QFs being treated less  
14      favorably than utility owned hydro.

15   **Q.    Do you recommend different rates for specific renewable technologies?**

16   **A.**    Potentially, yes. Importantly, the Act recognizes that the Commission can allow for  
17      differences among generation types in approving avoided cost methodologies. While my  
18      testimony has focused on hydro operations, generation characteristics for other  
19      technologies vary significantly from hydro generation. Thus, the development of rates  
20      which allow for the full recovery of the capacity costs may differ for other technologies. In  
21      fact, DEC has historically acknowledged as much by applying a higher PAF for hydro  
22      rates.

1   **Q.   In addition to rates, are there any other matters before the Commission in this**  
2       **proceeding that could assist hydro operators?**

3   **A.**   Yes. PPA duration with consistent capacity payments over a long term are not subject to  
4       the unpredictability of when DEC is in a capacity surplus or deficit. Hydropower is unique  
5       in the renewable energy industry in that the facilities are local, capital intensive assets that  
6       require ongoing civil (i.e., dam), mechanical, and electrical improvements over a very  
7       long-term planning horizon of many decades in our communities. It is difficult to finance  
8       turbine overhauls and critical dam safety improvements when the resource adequacy  
9       compensation does not provide reasonable incentives on a long-term basis. Unexpected  
10      repairs are not planned, resulting in material economic barriers when capacity pricing does  
11      not incentivize near term repairs and or replacements, which potentially creates a less  
12      reliable grid asset. PPA durations with capacity payments over a long period consistent  
13      with the Act's requirements are necessary.

14   **Q.   Do you anticipate the situation improving for small hydro producers without**  
15       **assistance from the Commission?**

16   **A.**   No. Under existing avoided cost rates and methodology, small independent hydro assets  
17       will not survive long-term. Moreover, the technical demands of utilities have only  
18       increased, causing the cost of hydro operations to increase without corresponding cost  
19       recovery. For example, the rapid build out of solar facilities in DEC's territory has resulted  
20       in small hydro owners trying to keep up with ever-changing pricing schedules. Operating  
21       hydroelectric facilities to keep up with more complex pricing schemes has resulted in more  
22       costly staffing and automation requirements. The unpredictable daily pricing schedule

1 from DEC has also affected future revenue uncertainty, adversely impacting the present  
2 value of the hydroelectric facilities and the ability to plan for future operations.

3 **Q. Will you update your testimony based on information that becomes available?**

4 **A.** Yes. Pelzer and Aquenergy reserve the right to revise and add to their testimony via  
5 supplemental or amended testimony, especially if new information becomes available or  
6 known.

7 **Q. Does this conclude your testimony?**

8 **A.** Yes, with a brief closing comment. The bottom-line concern here is the viability of small  
9 hydro in this state. Currently Pelzer's and Aquenergy's South Carolina facilities are  
10 operating at an approximately 50% loss. This cannot be sustained. For all of the real costs  
11 of operating a hydro facility and public benefits gained as described earlier, those should  
12 be fully recognized by DEC. Failure to acknowledge these costs and benefits will result in  
13 operational, renewable assets being scrapped and lost in the state and local communities.  
14 That is a needless loss and inconsistent with this state's public policy and the Act.  
15 Thank you for the opportunity to provide my sworn testimony in this important matter.